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AS

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/223,472 12/30/98 LEE

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IM22/1207
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EXAMINER

KEEHAN, C

ART UNIT	PAPER NUMBER
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1741

DATE MAILED:

12/07/99

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/223,472

Applicant(s)

LEE, KEVIN J.

Examiner

Christopher M Keehan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 6-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 18-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) ____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 14) ☒ Notice of References Cited (PTO-892)
- 15) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 16) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 17) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 18) ☐ Notice of Informal Patent Application (PTO-152)
- 19) ☐ Other: _____

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Drawings

This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-5, and 18-26, drawn to a method of electroplating a substrate, classified in class 205, subclass 122.
- II. Claims 6-10, drawn to an apparatus for plating a substrate, classified in class 134 and class 427.
- III. Claims 11-17, drawn to an apparatus for electroplating a substrate, classified in class 204, subclass 237.

The inventions are distinct, each from the other because of the following reasons:

Inventions of Group I and Group III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process.

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(MPEP § 806.05(e)). In this case the method can be practiced with a materially different apparatus such as that of Group II.

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(MPEP § 806.05(e)). In this case the method of Group I can be practiced with a materially different apparatus such as that of Group III.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Michael A. Bernadicou on November 30, 1999, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-5, and 18-26. Affirmation of this election must be made by applicant in replying to this Office action. Claims in Group II (6-10), and Group III (11-17) are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

DETAILED ACTION

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Mori (5,443,707). Mori discloses a method for applying a liquid material onto a substrate surface by placing the substrate surface within an enclosure (col.3, lines 22-25), introducing liquid material into the enclosure (col.3, lines 38-41), and directing the liquid material angularly toward the substrate surface (col.3, lines 41-46) so that the liquid material flows rotationally upon contact with the substrate surface (col.3, lines 46-50).

In regards to Claim 2, Mori discloses pressing the substrate against the enclosure to form a seal (col.3, lines 35-38).

In regards to Claim 3, Mori discloses a cathode contact coupled to the substrate surface (col.3, lines 35-38), an anode (col.3, lines 41-45), and the liquid material is an electrolytic bath to form an electrochemical cell (col.3, lines 6-10).

In regards to Claims 4 and 5, Mori discloses forming a metallic film on the substrate surface (col.3, lines 46-50) including copper (col.3, lines 10-12).

Regarding Claim 18, Mori discloses a method of electroplating a material onto a substrate surface within an enclosed chamber (col.3, lines 22-25) by securing the

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substrate within an opening in the chamber with the substrate facing the chamber interior (col.2, lines 22-25), coupling an anode and a cathode (col.3, lines 47-50), introducing a liquid electrochemical bath to the chamber interior (col.3, lines 38-41), and directing the liquid toward the substrate surface so that the liquid flows rotationally upon contact with the substrate surface (col.3, lines 46-50).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori in view of Sato et al (4,981,559). Mori is as set forth and incorporated herein. Mori is silent regarding introducing the plating liquid by spraying the liquid from a plurality of spray outlets. Sato et al teach a process of electroplating by liquid injection from a plurality of spray outlets directed angularly toward the substrate surface (col.2, lines 56-59). It would have been obvious to one skilled in the art at the time the invention was made to have added the adjustably angled spray nozzles as taught by Sato et al to the

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electroplating method as taught by Mori because Sato et al teach that having adjustably angled spray nozzles for electroplating allows for better coverage and a more uniform film resulting in a more efficient electroplating process.

In regards to Claims 21-24, Mori is silent regarding the spray outlets being angled from 20 to 60 degrees from vertical, the liquid being directed radially outward from the center of the substrate surface, the liquid being directed circumferentially with respect to perpendicular toward the substrate surface, and at least one of a plurality of spray outlets being pointed perpendicular toward the center of the substrate surface. However, Sato et al disclose that each spray nozzle has an angle of spray injection that can be adjusted in all directions (col.2, lines 59-62). It would have been obvious to one skilled in the art at the time the invention was made that the spray outlets being angled from 20 to 60 degrees from vertical, the liquid being directed radially outward from the center of the substrate surface, the liquid being directed circumferentially with respect to perpendicular toward the substrate surface, and at least one of a plurality of spray outlets being pointed perpendicular toward the center of the substrate surface, can be accomplished by adjustable spray nozzles as taught by Sato et al in the method of Mori because Sato et al teach that adjustable spray nozzles allow for greater control of the angle at which the electroplating spray encounters the substrate surface resulting in a more controlled and efficient process. In addition, adding adjustability where needed is not a patentable advance; *In re Stevens*, 101 USPQ 284.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Christopher Keehan *cm*

December 6, 1999

Kathryn Garg